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Thread: picaxe 14M2 and SPI nRF24L01+ :(

26-09-2013, 16:52 #1

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

picaxe 14M2 and SPI nRF24L01+ :(

Hi,
I buyes all my components for my project (http://www.picaxeforum.co.uk/showthr...ms-of-my-house), 3 picaxe 14M2 and 4 nRF24L01+ spi 2.4ghz wifi module.
Unfortunately, i see only now that the picaxe 14M2 doesn't support SPI native.
Is there any way to give the nRF24L01 module working with picaxe 14M2 without trashing 14M2 and buy (again) another picaxe (20M2? 28M2?)

Many thanks!
Yuri

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26-09-2013, 17:05 #2

hippy

Technical Support
Join Date: Jan 1970

The 14M2 can have SPI implemented in software; see "PICAXE Manual 2 - Basic Commands" which detail the routines to achieve that.

Location: UK
Posts: 22,443

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26-09-2013, 17:39 #3

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

ok, you mean spiin and spout command?

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27-09-2013, 11:35 #4

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

> Originally Posted by **yuripace**
> ok, you mean spiin and spout command?

ok, i checked that these command are not supported in M2..so, i'm trying to get the shiftin_LSB_Pre shiftout_LSBFirst routines on the manual working, without success for now...any help?

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27-09-2013, 13:16 #5

hippy

Technical Support
Join Date: Jan 1970
Location: UK
Posts: 22,443

> Originally Posted by **yuripace**
> i'm trying to get the shiftin_LSB_Pre shiftout_LSBFirst routines on the manual working, without success for now...any help?

It's hard to say what isn't working just from a 'not working' description; is the SPI protocol used correct, are you using the right pins, is the hardware wired correctly, are you sending the correct data ?

From the datasheet below (page 47) it seems the nRF24L01 SPI communications are most significant bit first, and you will have to clock in the status bits while clocking out the command bits -

http://www.nordicsemi.com/eng/conten...ation_v2_0.pdf

The nRF24L01 seems to be a small QFN package so is it on some breakout board or module ? What power supply are using ?

The more details of the hardware and software you are using the better people will be able to help.

The nRF24L01 looks to be a quite complicated device so there may only be limited help available here beyond getting SPI to work.

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27-09-2013, 13:31 #6

yuripace

New Member

Join Date: Aug 2013
Location: Italy
Posts: 16

you're right
I'm using picaxe vsm downloaded from website to test mt project. Now i have a ds18b20 correcly showing temp on an lcd serial display.
Now, since vsm doesn't have nRF24L01, i was try to simulate an SPI communication between 2 picaxe, then i encountered the problem i described, that SPI is not "natively" support in 14M2, and now i'm trying to get the subroutines i found on the manual (shiftin_LSB_Pre shiftout_LSBFirst) working.
I admit that i'm very noob about this, and i'm trying to find what's wrong for now. I'm a programmer, but i had problem understanding this:

```
; ~~~~~ SYMBOL DEFINITIONS ~~~~~
; Required for all routines. Change pin numbers/bits as required.
; Uses variables b7-b13 (i.e. b7,w4,w5,w6). If only using 8 bits
; all the word variables can be safely changed to byte variables.

;***** Sample symbol definitions *****
symbol sclk = 5 ; clock (output pin)
symbol sdata = 7 ; data (output pin for shiftout)
symbol serdata = input7 ; data (input pin for shiftin, note input7)
symbol counter = b7 ; variable used during loop
symbol mask = w4 ; bit masking variable
symbol var_in = w5 ; data variable used durig shiftin
symbol var_out = w6 ; data variable used during shiftout
symbol bits = 8 ; number of bits
symbol MSBvalue = 128 ; MSBvalue =128 for 8 bits, 512 for 10 bits, 2048 for 12 bits)
```

shiftin_LSB_Pre:

```
let var_in = 0
for counter = 1 to bits ; number of bits
var_in = var_in / 2 ; shift right as LSB first
if serdata <> 0 then
var_in = var_in + MSBValue ; set MSB if serdata = 1
end if
pulsout sclk,1 ; pulse clock to get next data bit
next counter
return
```

1 - symbol sclk = 5
this should be C.1 (in example..) and not a numer..is this correct?
2 - symbol serdata = input7 i have to replace input7 with the pin numer i choose. lets assume C.2
3 - assuming that what i said in point 1 and 2 is correct
(IE: symbol sclk = 4
symbol sdata = 5
symbol serdata = 6)
i get a sintax error here: if serdata <> 0 then
and i cannot understand why.

So, i'm very far to get nRF24L01, first step is get an spi communication between two picaxe (is this correct?)..
Any ideas?

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27-09-2013, 14:06 #7

hippy

Technical Support
Join Date: Jan 1970
Location: UK
Posts: 22,443

> Originally Posted by **yuripace**
> first step is get an spi communication between two picaxe (is this correct?)..

Unfortunately not. The PICAXE hardware and software routines only support Master SPI mode where the PICAXE generates the clock signal and you cannot have two SPI Masters connected together.

A better first step would be having a single PICAXE communicate with an SPI device such as SPI Eeprom.

It might be worth looking at the supplied "shiftin" or "shiftout" command samples provided with PICAXE VSM for reference.

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27-09-2013, 16:52 #8

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

> Originally Posted by **hippy**
>
> Unfortunately not. The PICAXE hardware and software routines only support Master SPI mode where the PICAXE generates the clock signal and you cannot have two SPI Masters connected together.
>
> A better first step would be having a single PICAXE communicate with an SPI device such as SPI Eeprom.
>
> It might be worth looking at the supplied "shiftin" or "shiftout" command samples provided with PICAXE VSM for reference.

i completly forgot about the "master problem".
About the sample command, i already checked, but the sample program uses the spiin/spout command, not supported in the 14M2, this is the main problem!
i want to use the 14M2 because i already bought them...

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27-09-2013, 17:14 #9

hippy

Technical Support
Join Date: Jan 1970
Location: UK
Posts: 22,443

> Originally Posted by **yuripace**
>
> About the sample command, i already checked, but the sample program uses the spiin/spout command, not supported in the 14M2

That is correct; you can use the sample designs as the basis for connecting to an SPI device but you will have to change the PICAXE to a 14M2 and use the software SPI routines adjusted for 14M2 use and your hardware.

To change 'serdata' for the pin you want to use you, say C.2, you need to use -

Symbol serdata = pinC.2

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27-09-2013, 17:27 #10

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

many thanks for your help!
I try right now, lets see whats happen xD

edit: you pointed me to the right direction. I'm now trying to understand how the spi eprom works, how to wire and how to use correctly the shiftin/shiftout custom routines. Lot of things

Last edited by yuripace; 27-09-2013 at 20:01.

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Thread: picaxe 14M2 and SPI nRF24L01+ :(

04-10-2013, 16:15 #11

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

no significative step..any help? its not clear how to use that routines..is there any docs?

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04-10-2013, 16:34 #12

hippy

Technical Support
Join Date: Jan 1970
Location: UK
Posts: 22,443

> Originally Posted by **yuripace**
> no significative step..any help? its not clear how to use that routines..is there any docs?

There are details in "PICAXE Manual 2 - Basic Commands" -

http://www.picaxe.com/Getting-Started/PICAXE-Manuals

Plus code examples online at -

http://www.picaxe.com/BASIC-Commands...facing/shiftin
http://www.picaxe.com/BASIC-Commands...acing/shiftout

What do you have at present ? If you have created a VSM design then perhaps post it along with your code then other members can take a look at it, see where you have progressed to, and be better able to advice.

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04-10-2013, 16:36 #13

vttom

Senior Member
Join Date: Jan 1970
Posts: 345

I successfully interface an 08M with a SPI eprom-like device. I found the spiin and spiout examples in the manual to be much more complicated than they needed to be, so I wrote my own version that was much simpler. Refer to his thread for my code... http://www.picaxeforum.co.uk/showthr...ith-PICAXE-08M

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04-10-2013, 19:22 #14

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

> Originally Posted by **vttom**
> I successfully interface an 08M with a SPI eprom-like device. I found the spiin and spiout examples in the manual to be much more complicated than they needed to be, so I wrote my own version that was much simpler. Refer to his thread for my code... http://www.picaxeforum.co.uk/showthr...ith-PICAXE-08M

well, i'm debugging your code to understand how it works. Correct me: u are using writetospi to write 2 bytes (b0 and b1) to the spi eeprom, and readfromspi to read the 2 bytes (with calling 2 times the spiout sub you defines) starting from address 0 of spi eprom (and send to pc with
pwmout C.2, 51, 104 ' Fire up the SPICLK @ 38400Hz
pause 3413 ' 2 * 1000 * 8192 * 8 / 38400
pwmout C.2, 0, 0 ' Shut down SPICLK
)
is this right?

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04-10-2013, 19:41 #15

0rphu

New Member
Join Date: Dec 2012
Location: Slovakia
Posts: 12

I'd like to suggest some additional documents that helped me a lot with nRF24L01+.
First, the fine tutorial http://www.diyembedded.com/tutorials...tutorial_0.pdf, makes more sense than reading the datasheet alone, just note there are small differences when using the "+" chip.
Then there is a thread in this forum with great demo programs for nRF24l01+ that helps you init the RF chip
http://www.picaxeforum.co.uk/showthr...y-FOB-SparkFun

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07-10-2013, 18:52 #16

yuripace

New Member
Join Date: Aug 2013
Location: Italy
Posts: 16

> Originally Posted by **0rphu**
> I'd like to suggest some additional documents that helped me a lot with nRF24L01+.
> First, the fine tutorial http://www.diyembedded.com/tutorials...tutorial_0.pdf, makes more sense than reading the datasheet alone, just note there are small differences when using the "+" chip.
> Then there is a thread in this forum with great demo programs for nRF24l01+ that helps you init the RF chip
> http://www.picaxeforum.co.uk/showthr...y-FOB-SparkFun

this is the next step, currently i'm trying to make the shift subroutines working i'm sure that i'm doing something wrong. as suggested i'll put the vms design here asap

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